Space Weather Forecast

Issued on Friday, 07 July 2023 at 01:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of R1/R2 Radio Blackouts. Minor to Moderate Geomagnetic Storms possible today with CME arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with one Moderate flare observed, from a large region now beyond the northwest limb. There are ten sunspot regions on the disc in total, eight of which are numbered. Of these regions two have evolved notably through the last 24 hours, increasing in both length and complexity, becoming moderately magnetically complex. The largest region is in the southeast quadrant, but currently appears stable. A weak CME appears to have emanated from the southeast quadrant around 06/0600UTC, and is unlikely to be Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind as observed at L1, indicates a possible connection to a weakly enhanced solar wind. Solar wind speeds have remained at slightly elevated levels, with the magnetic field strength persisting at moderate levels. The north-south component was predominantly weak, and resulting geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is forecast, with a chance of Moderate flares, but a decreasing risk of Strong flares from a region which has rotated off the solar disc. A number of regions rotating onto the visible disc, through the forecast period, may increase activity.

Solar Wind / Geomagnetic Activity: A CME which left the Sun 04 July is forecast to arrive at Earth either late on 06 July, or on 07 July, with elevated wind speeds. Without a CME arrival solar wind speeds would be expected to increase to elevated or even strong levels later today due to a connection to coronal hole feature. Later in the forecast period a decline to slightly elevated speeds is expected. Geomagnetic activity is forecast to increase from Quiet to Unsettled, to become Unsettled to Active with a risk of Minor or Moderate storms today and tomorrow due to the possible CME arrival, and to a lesser extend coronal hole influence. Through day 4 (10th) Quiet to Unsettled conditions are expected

Energetic Particles / Solar Radiation: Solar radiation has a slight chance of reaching the S1/Minor Storm threshold through the period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	40	10	5
Strong	G3	No	10	5	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	20	20	20	20
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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